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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,402	01/15/2002	Olobo Jonathan Obaje	21429-12	9054

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EXAMINER

LEWIS, PATRICK T

ART UNIT	PAPER NUMBER
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1623

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DATE MAILED: 05/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,402

Applicant(s)

OBAJE, OLOBO JONATHAN

Examiner

Patrick T. Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-23 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Singapore on February 24, 2001. It is noted, however, that applicant has not filed a certified copy of the 200100727-7 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

2. The disclosure does not contain references listed on a proper information disclosure statement. Therefore, unless the references have been cited by the examiner on form PTO-892, applicant should not assume references have been considered.

Specification

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.

- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. Applicant's attention is directed to page 7 of the specification. The description of Figures 1 and 2 are not properly identified. Appropriate correction is required.

Claim Objections

5. Claims 9-12, 14-19, and 21-23 are objected to because of the following informalities: the abbreviation "HLB" should refer readers to the terms from which said abbreviation arises. Appropriate correction is required.

6. Claim 17 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-6 and 9-16, 18-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. The term "reduced pressure" in claims 1 and 14 is a relative term which renders the claim indefinite. The term "reduced pressure" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Applicant has failed to provide a starting or reference pressure from which a "reduced pressure" is derived. If it is applicant's intention to claim a process in which the pressure is less than atmospheric pressure, the claims should be amended to more precisely reflect applicant's intentions.

10. Claim 19 recites the limitation "workup solvents" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Hasenhuettl U.S. Patent 5,440,027 (Hasenhuettl).

Hasenhuettl discloses a carbohydrate fatty acid produced via a solvent-free transesterification of acylated carbohydrates under reduced pressure, 1 – 500 mm Hg, at a temperature of 95-200° C in the presence of an acid catalysts (column 5, lines 56-68; column 3, lines 34-68; column 4, lines 1-2; column 9, lines 56-68; column 11, lines 2-21).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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15. Claims 1-10, 13, 16, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasenhuettl U.S. Patent 5,440,027 (Hasenhuettl) in combination with D'Amato U.S. Patent 3,054,789 (D'Amato), Silver et al. U.S. Patent 5,596,085 (Silver), Matsumoto et al. U.S. Patent 5,008,387 (Matsumoto), and Heesen et al. U.S. Patent 3,951,945 (Heesen).

Claim 1 is drawn to a process for preparing carbohydrate fatty-acid esters comprising: a) reacting acylated carbohydrate with free fatty acid in the presence of an acid catalysts under reduced pressure; b) decolorizing and separating out the unreacted fatty acid from the reaction mixture or step a); c) precipitating out the unreacted acylated carbohydrate from the reaction mixture obtained from step b); and d) recovering carbohydrate fatty ester from the reaction mixture obtained from step c). Claims 2-10, 13, 16, and 18-21 depend from claim 1. Claim 2 is drawn to a process wherein no solvent is added in step a). Claims 3 and 4 limit the manner in which the unreacted fatty acid is removed in step b). Claim 5 limits the temperature range for precipitating the unreacted acylated carbohydrate in step c). Claim 6 is drawn to a process wherein the unreacted fatty acid and acylated carbohydrate is recycled. Claims 7-8 limit the pressure range wherein step a) is carried out. Claims 9-10 are drawn to HLB properties of the products produced. Claim 13 limits the temperature range in which step a) is performed. Claim 16 limits the carbohydrates employed in the process. Claim 18 limits the acid catalyst employed. Claims 19-20 limit the workup solvents. Claim 21 limits the free fatty acids employed.

Hasenhuettl teaches the solvent-free transesterification of acylated carbohydrates under reduced pressure, 1 – 500 mm Hg, at a temperature of 95-200° C in the presence of an acid catalysts, which meets the sulfuric acid of claim 18 (column 5, lines 56-68; column 3, lines 34-68; column 4, lines 1-2; column 9, lines 56-68; column 11, lines 2-21). Saccharides disclosed as starting materials include glucose, sucrose, and raffinose along with other monosaccharides, disaccharides, and higher polysaccharides (column 7, lines 6-20). Suitable free fatty acids used in the process include butyric, lauric, palmitic, stearic, and oleic acids (column 8, lines 65-68; column 9, lines 1-18). Hasenhuettl further teaches that conventional purification techniques may be employed such as neutralization, dissolution into an organic solvent such as hexane, and decolorization with activated charcoal or hydrogen peroxide.

Hasenhuettl exemplifies purification of the products by distillation and filtration but lacks the recitation of separating the unreacted fatty acid and precipitating the unreacted acylated carbohydrate. Hasenhuettl teaches the use of partially acylated carbohydrates; however, Silver employs an identical process using partially or fully acylated carbohydrates (sucrose octaacetate) (columns 5-10).

D'Amato teaches a process preparing pure sucrose fatty esters. D'Amato teaches that after removal of the catalyst and neutralization, the resulting mixture is continuously extracted with an organic solvent capable of dissolving the unreacted fatty acid lower alkyl ester or glyceride and the free fatty acid present in the medium, and in which the fatty acid sucrose ester is insoluble, and having a favorable partition coefficient (column 1, lines 61-72; column 2, lines 1-3).

Heesen teaches a method for purifying fatty acid esters of saccharides. Heesen teaches that non-esterified fatty acid can be removed by reaction with a bivalent cation with formation of insoluble calcium fatty acids salts and subsequent filtration, by treatment with ion exchange resins, by fractionated crystallization or a similar treatment, by (molecular) distillation (column 4, lines 15-21).

Matsumoto teaches a process for purifying sucrose fatty acid esters. Masumoto teaches that the removal of the unreacted sucrose from the reaction mixture containing sucrose fatty acid ester has been generally conducted by utilizing the property that sucrose is slightly soluble in common organic solvents, namely by adding a solvent to the reaction mixture to precipitate the unreacted sucrose and removing the precipitate (column 1, lines 39-45).

It would have been obvious to one of ordinary skill in the art at the time of the invention to prepare carbohydrate fatty-acid esters by a process comprising: a) reacting acylated carbohydrate with free fatty acid in the presence of an acid catalysts under reduced pressure; b) decolorizing and separating out the unreacted fatty acid from the reaction mixture or step a); c) precipitating out the unreacted acylated carbohydrate from the reaction mixture obtained from step b); and d) recovering carbohydrate fatty ester from the reaction mixture obtained from step c) as Hasenhuettl teaches the transesterification reaction and the product is purified using conventional means. The instantly claimed purification techniques are seen to be well within the purview of one of ordinary skill in the art at the time of the invention. The purification steps of the instantly claimed process are based on the solubility properties of the resultant reaction mixture.

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The use of solubility properties for purifying carbohydrate fatty acid esters is well known in the art. The choice of the appropriate solvents, pH, temperatures, and concentrations are seen to be well within the purview of the skilled artisan. The skilled artisan would readily recognize that the precipitation of a given compound is generally enhanced by lowering the temperature of the solution in which it is contained. The specific condition manipulated in order to affect the solubility of a given compound is seen to be a choice of experimental design. It would have also been obvious to one of ordinary skill in the art to recycle the unreacted components of the reaction mixture as it is well established that batch and continuous processes are not patentably distinct. The recitation of HLB values of the product produced is not seen to add any patentable weight to the instantly claimed process as all of the process steps for preparing the carbohydrate fatty acid esters are taught in the art. Where the steps of a process are the same as the prior art, and the only difference is in the recital of the product produced, the process is unpatentable over the prior art.

Conclusion

16. Claims 1-23 are pending. Claims 1-16 and 18-23 are rejected. Claim 17 is objected to. No claims are allowed.

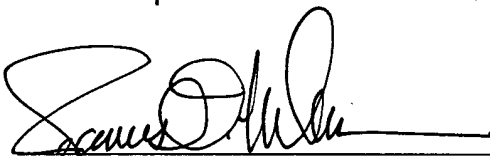
Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick T. Lewis whose telephone number is 703-305-4043. The examiner can normally be reached on M-F 10:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 703-308-4624. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Patrick T. Lewis, PhD
Examiner
Art Unit 1623


James O. Wilson
Supervisory Patent Examiner
Technology Center 1600

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May 20, 2003